

What is claimed is:

1. An interconnecting power generation system connected in parallel to a utility power system for supplying electrical power to an interconnecting load, comprising:

5 an interconnecting inverter for linking generated electrical power to said utility power system;

a voltage phase shift circuit which synchronizes the output voltage phase of said interconnecting inverter with the utility power voltage phase and monitors zero crossings of said utility power voltage, and which, when a predetermined number of zero crossings have been detected, shifts said output voltage phase from said utility power voltage phase during one cycle and shifts the shifted output voltage phase to said utility power voltage phase during the following cycle;

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15 a circuit breaker for shutting off the output of said interconnecting inverter from said utility power system;

a phase comparator for comparing the voltage phase of said utility power system and said output voltage phase of said interconnecting inverter; and

20 an interconnection control unit which detects a power outage caused by an interruption of power supply from said utility power system based on a series of a predetermined number of matching signals outputted from said phase comparator and sends a control signal to said circuit breaker to shut off the output of said interconnecting inverter from said utility power system.

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2. The interconnecting power generation system according to Claim 1, wherein, when no matching signal is outputted from said phase comparator within a period during which said output voltage phase is to be matched with said utility power voltage

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phase, said interconnection control unit detects variations in the frequency of said utility power system and sends a control signal to said circuit breaker to shut off the output of said interconnecting inverter from said utility power system.

- 5 3. An interconnecting power generation system connected in parallel to a utility power system and for supplying electrical power to an interconnecting load, comprising:

 a turbogenerator for generating electrical power,

 an interconnecting inverter for linking electrical power
10 generated by said turbogenerator to said utility power system;

 a voltage phase shift circuit which synchronizes the output voltage phase of said interconnecting inverter with the utility power voltage phase and monitors zero crossings of said utility power voltage, and which, when a predetermined number of zero
15 crossings have been detected, shifts said output voltage phase from said utility power voltage phase during one cycle and shifts the shifted output voltage phase to said utility power voltage phase during the following cycle;

 a circuit breaker for shutting off the output of said
20 interconnecting inverter from said utility power system;

 a phase comparator for comparing the voltage phase of said utility power system and said output voltage phase of said interconnecting inverter; and

 an interconnection control unit which detects a power outage
25 caused by an interruption of power supply from said utility power system based on a series of a predetermined number of matching signals outputted from said phase comparator and sends a control signal to said circuit breaker to shut off the output of said interconnecting inverter from said utility power system,
30 and which decreases the rotational speed of said turbogenerator

to a predetermined speed during the period between the detection of said power outage and the shutoff of said utility power system.

4. The interconnecting power generation system according to
5 Claim 3, wherein said turbogenerator recharges a battery within said predetermined period of time in response to said shutoff command.

5. An interconnecting power generation system connected in parallel to a utility power system and for supplying electrical
10 power to an interconnecting load, comprising:

 a turbogenerator for generating electrical power,

 an interconnecting inverter for linking electrical power generated by said turbogenerator to said utility power system;

 a voltage phase shift circuit which synchronizes the output
15 voltage phase of said interconnecting inverter with the utility power voltage phase and monitors zero crossings of said utility power voltage, and which, when a predetermined number of zero crossings have been detected, shifts said output voltage phase from said utility power voltage phase during one cycle and
20 shifts the shifted output voltage phase to said utility power voltage phase during the following cycle;

 a circuit breaker for shutting off the output of said interconnecting inverter from said utility power system;

 a phase comparator for comparing the voltage phase of said
25 utility power system and said output voltage phase of said interconnecting inverter; and

 an interconnection control unit which detects a power outage caused by an interruption of power supply from said utility power system based on a series of a predetermined number of
30 matching signals outputted from said phase comparator and sends

a control signal to said circuit breaker to shut off the output of said interconnecting inverter from said utility power system, and sends a shutoff command to said turbogenerator to stop the operation of said turbogenerator after allowing the turbine to
5 rotate at the rated rotational speed for a predetermined period of time.

6. The interconnecting power generation system according to Claim 5, wherein said turbogenerator recharges a battery within said predetermined period of time in response to said shutoff
10 command.